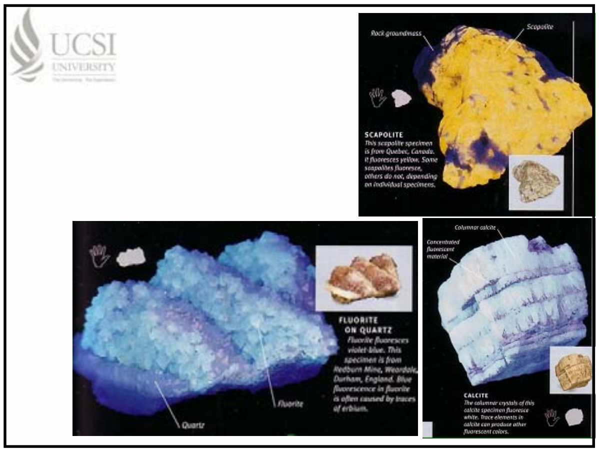
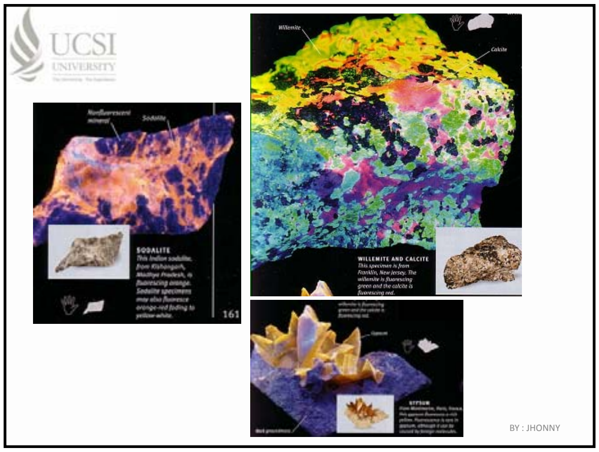


SCAPOLITE This scapolite specimen is from Quebec, Canada. It fluoresces yellow. Some scapolites fluoresce, others do not, depending on individual specimens.

FLUORITE ON QUARTZ Fluorite fluoresces violet-blue. This specimen is from Redburn Mine, Weardale, Durham, England. Blue fluorescence in fluorite is often caused by traces of erbium.

CALCITE The columnar crystals of this calcite specimen fluoresce white. Trace elements in calcite can produce other fluorescent colors.



SODALITE This Indian sodalite, from Kishangarh, Madhya Pradesh, is fluorescing orange. Sodalite specimens may also fluoresce orange-red fading to yellow-white.

WILLEMITE AND CALCITE This specimen is from Franklin, New Jersey. The willemite is fluorescing green and the calcite is fluorescing red.

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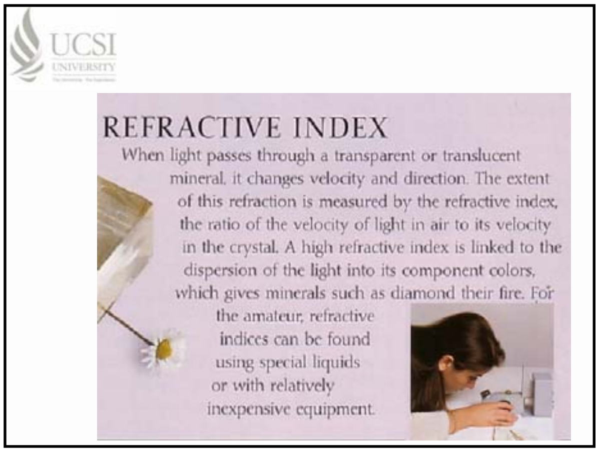
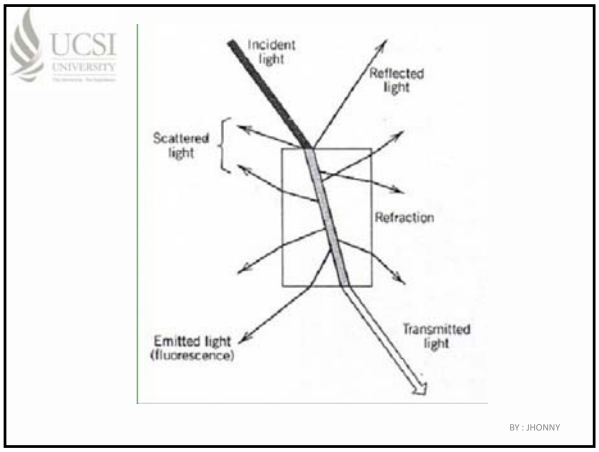
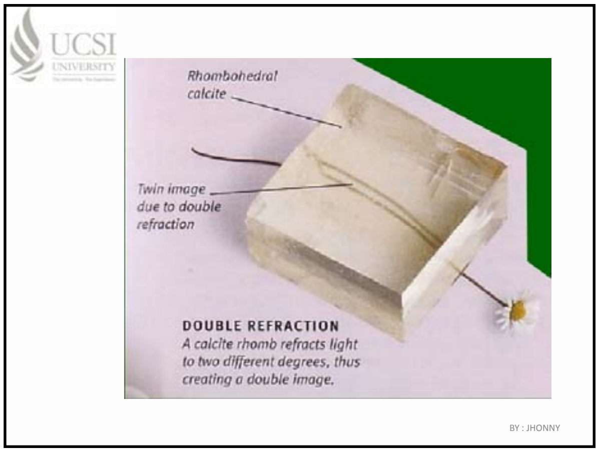


REFRACTIVE INDEX

When light passes through a transparent or translucent mineral, it changes velocity and direction. The extent of this refraction is measured by the refractive index, the ratio of the velocity of light in air to its velocity in the crystal. A high refractive index is linked to the dispersion of the light into its component colors, which gives minerals such as diamond their fire. For the amateur, refractive indices can be found using special liquids or with relatively inexpensive equipment.



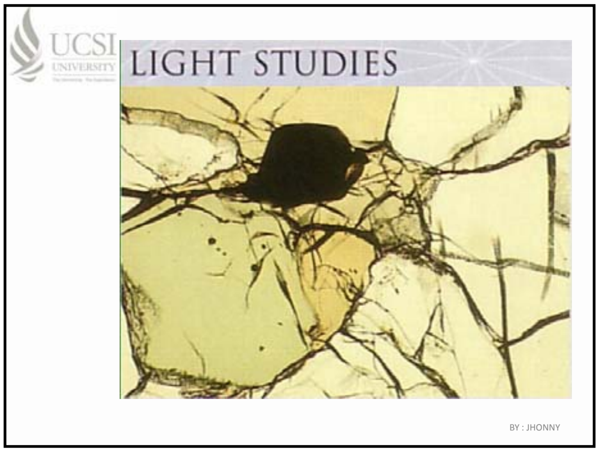
BY : JHONNY



DOUBLE REFRACTION
A calcite rhomb refracts light to two different degrees, thus creating a double image.

BY : JHONNY

LIGHT STUDIES



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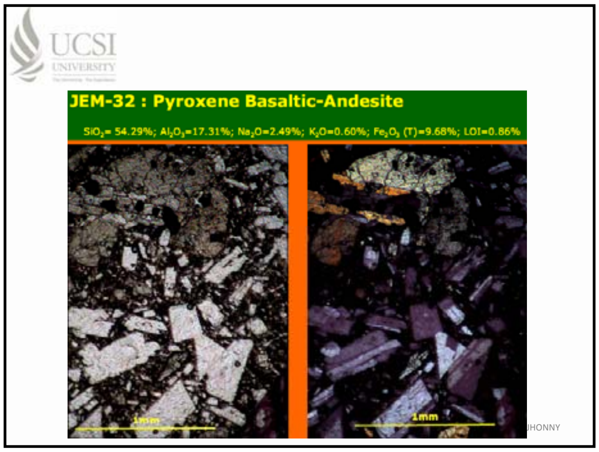
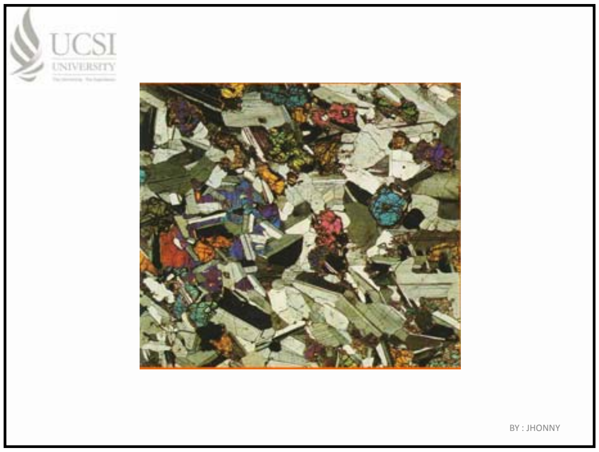


JEM-32 : Pyroxene Basaltic-Andesite

SiO_2= 54.29%; Al_2O_3=17.31%; Na_2O=2.49%; K_2O=0.60%; Fe_2O_3 (T)=9.68%; LOI=0.86%

JHONNY



BY : JHONNY

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Physical Mineralogy

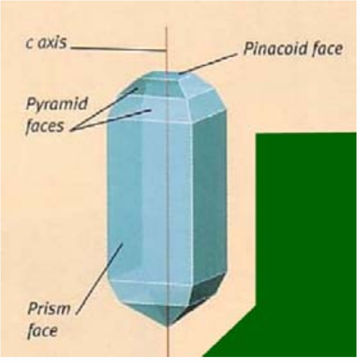
1. Properties depending upon light
2. Crystal Habit (of crystal form)
3. Hardness and Tenacity
4. Cleavage, parting and fracture
5. Density
6. Magnetic, and electrical properties

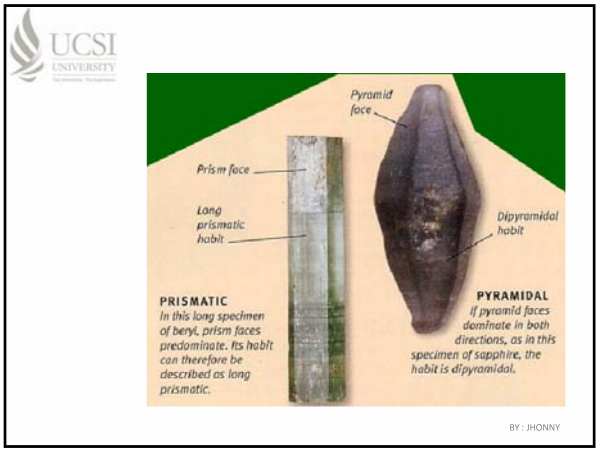
2. Crystal Habit

→Full description about the form of the crystal included :

- →The characteristic of the crystal
- →Naming of the crystal surface (prismatic, pyramid, and etc)
- →Crystal shape (cube, octahedron, etc)

The form of crystal has a relation with one single crystal or group → aggregate (massive, radial, etc).





PRISMATIC
In this long specimen of beryl, prism faces predominate. Its habit can therefore be described as long prismatic.

PYRAMIDAL
If pyramid faces dominate in both directions, as in this specimen of sapphire, the habit is dipyramidal.

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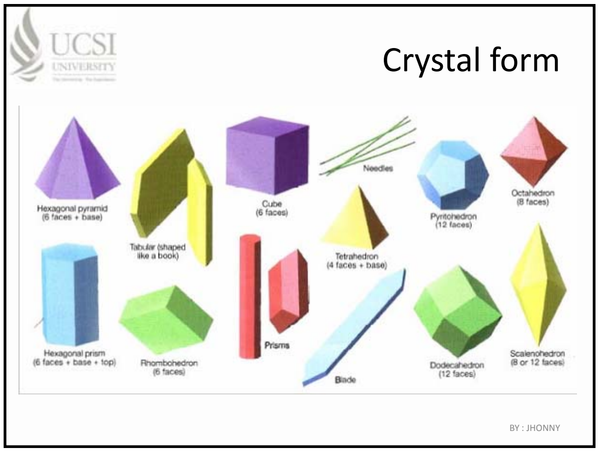

Crystal form

Hexagonal pyramid (6 faces + base)
Tabular (shaped like a book)
Cube (6 faces)
Needles
Pyritohedron (12 faces)
Octahedron (8 faces)
Tetrahedron (4 faces + base)
Hexagonal prism (6 faces + base + top)
Rhombohedron (6 faces)
Prisms
Blade
Dodecahedron (12 faces)
Scalenohedron (8 or 12 faces)

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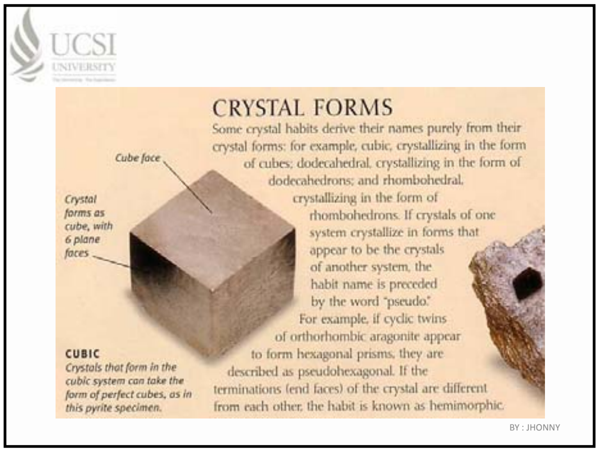

CRYSTAL FORMS

Some crystal habits derive their names purely from their crystal forms: for example, cubic, crystallizing in the form of cubes; dodecahedral, crystallizing in the form of dodecahedrons; and rhombohedral, crystallizing in the form of rhombohedrons. If crystals of one system crystallize in forms that appear to be the crystals of another system, the habit name is preceded by the word "pseudo." For example, if cyclic twins of orthorhombic aragonite appear to form hexagonal prisms, they are described as pseudohexagonal. If the terminations (end faces) of the crystal are different from each other, the habit is known as hemimorphic.

CUBIC
Crystals that form in the cubic system can take the form of perfect cubes, as in this pyrite specimen.

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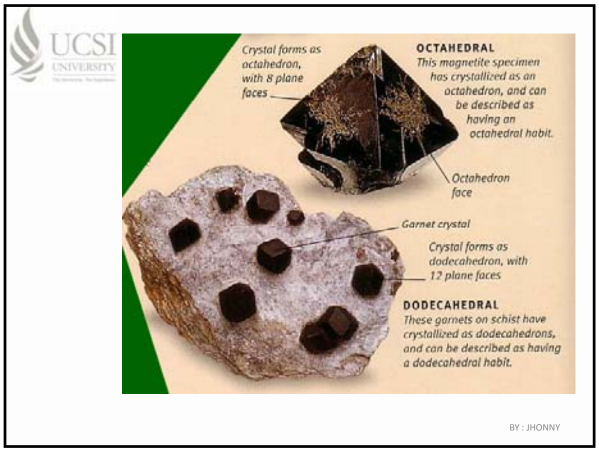
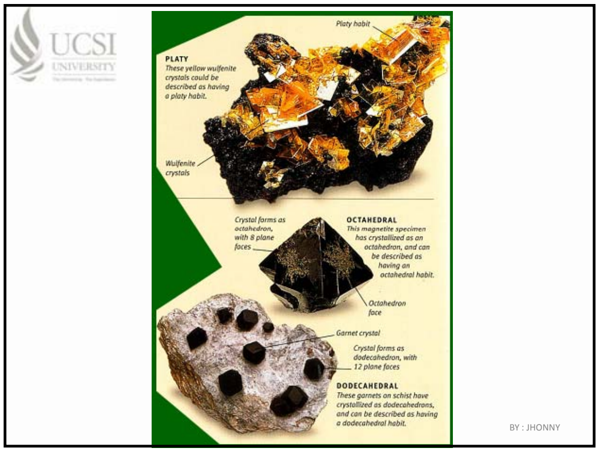

Crystal forms as octahedron, with 8 plane faces
Octahedron face
Garnet crystal
Crystal forms as dodecahedron, with 12 plane faces

OCTAHEDRAL
This magnetite specimen has crystallized as an octahedron, and can be described as having an octahedral habit.

DODECAHEDRAL
These garnets on schist have crystallized as dodecahedrons, and can be described as having a dodecahedral habit.

BY : JHONNY

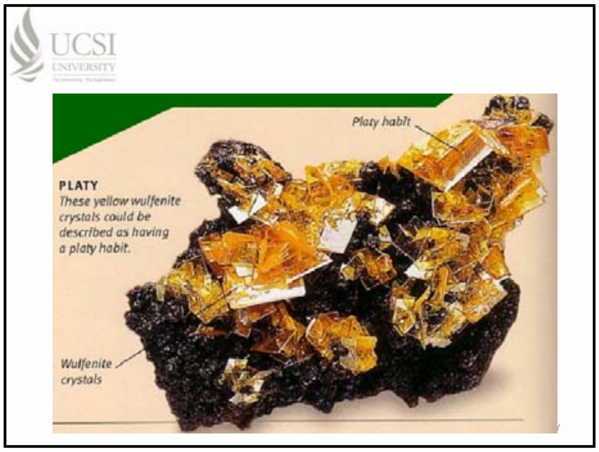

Platy habit
Wulfenite crystals
Crystal forms as octahedron, with 8 plane faces
Octahedron face
Garnet crystal
Crystal forms as dodecahedron, with 12 plane faces

PLATY
These yellow wulfenite crystals could be described as having a platy habit.

OCTAHEDRAL
This magnetite specimen has crystallized as an octahedron, and can be described as having an octahedral habit.

DODECAHEDRAL
These garnets on schist have crystallized as dodecahedrons, and can be described as having a dodecahedral habit.

BY : JHONNY



PLATY
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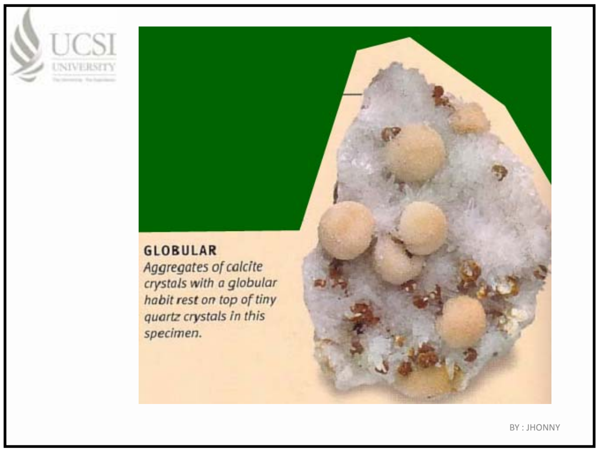

GLOBULAR

Aggregates of calcite crystals with a globular habit rest on top of tiny quartz crystals in this specimen.

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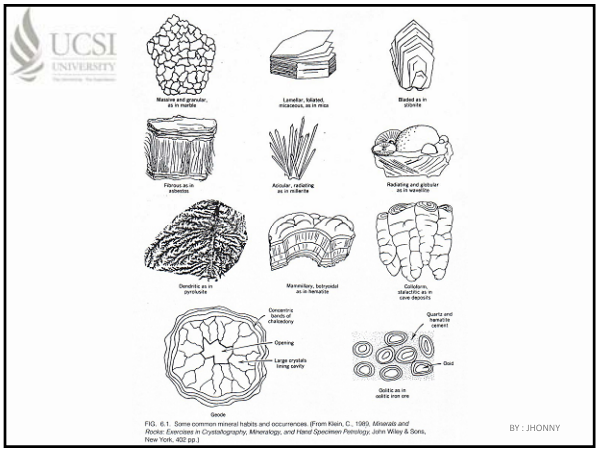
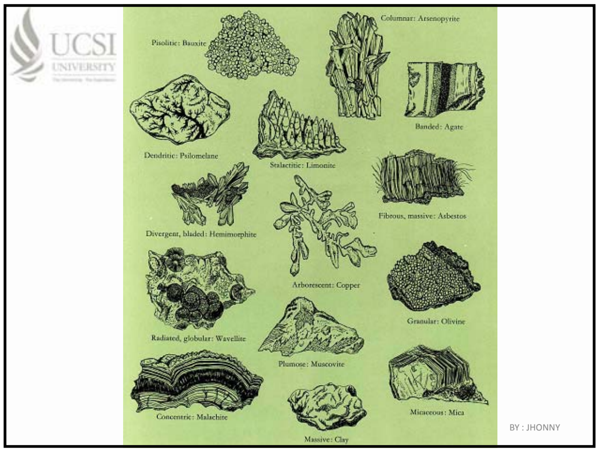
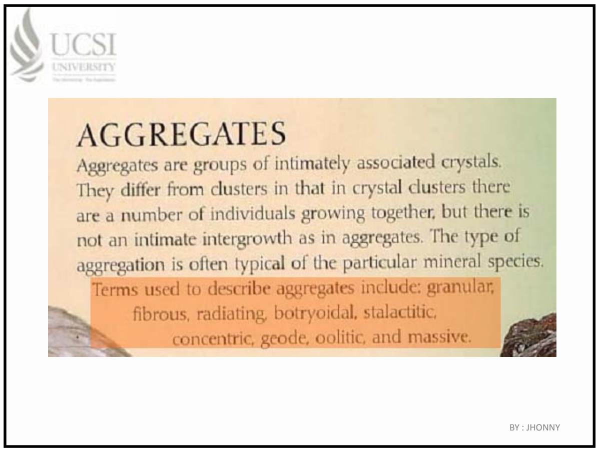

Massive and granular, as in marble
Lamellar, foliated, micaceous, as in mica
Bladed as in stibnite
Fibrous as in asbestos
Acicular, radiating as in millerite
Radiating and globular as in wavellite
Dendritic as in pyrolusite
Mammillary, botryoidal as in hematite
Colloform, stalactitic as in cave deposits
Concentric bands of chalcedony
Opening
Large crystals lining cavity
Geode
Quartz and hematite cement
Ooid
Oolitic as in oolitic iron ore

FIG. 6.1. Some common mineral habits and occurrences. (From Klein, C., 1989, *Minerals and Rocks: Exercises in Crystallography, Mineralogy, and Hand Specimen Petrology*, John Wiley & Sons, New York, 402 pp.)

BY : JHONNY



BY : JHONNY

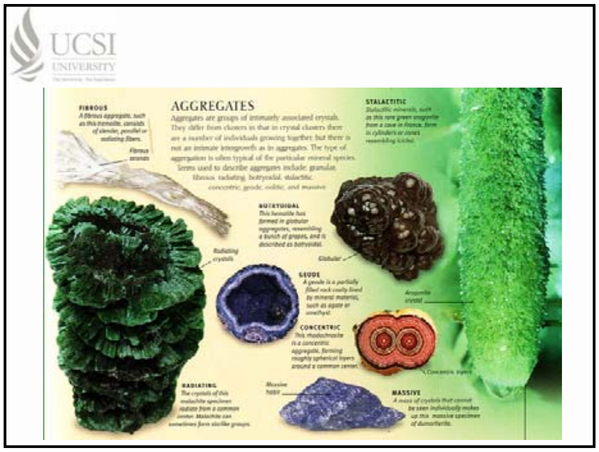


AGGREGATES

Aggregates are groups of intimately associated crystals. They differ from clusters in that in crystal clusters there are a number of individuals growing together, but there is not an intimate intergrowth as in aggregates. The type of aggregation is often typical of the particular mineral species.

Terms used to describe aggregates include: granular, fibrous, radiating, botryoidal, stalactitic, concentric, geode, oolitic, and massive.

BY : JHONNY



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Aggregates are groups of intimately associated crystals. They differ from clusters in that in crystal clusters there are a number of individuals growing together, but there is not an intimate intergrowth as in aggregates. The type of aggregation is often typical of the particular mineral species. Terms used to describe aggregates include: granular, fibrous, radiating, botryoidal, stalactitic, concentric, geode, oolitic, and massive.

FIBROUS A fibrous aggregate, such as this tremolite, consists of slender, parallel or radiating fibers.

STALACTITIC Stalactitic minerals, such as this rare green aragonite from a cave in France, form in cylinders or cones resembling icicles.

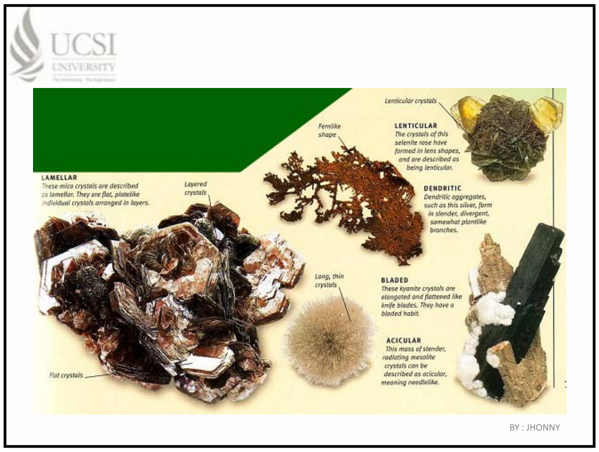
BOTRYOIDAL This hematite has formed in globular aggregates, resembling a bunch of grapes, and is described as botryoidal.

GEODE A geode is a partially filled rock cavity lined by mineral material, such as agate or amethyst.

CONCENTRIC This rhodochrosite is a concentric aggregate, forming roughly spherical layers around a common center.

RADIATING The crystals of this malachite specimen radiate from a common center. Malachite can sometimes form stalklike groups.

MASSIVE A mass of crystals that cannot be seen individually makes up this massive specimen of dumortierite.



LAMELLAR These mica crystals are described as lamellar. They are flat, platelike individual crystals arranged in layers.

LENTICULAR The crystals of this selenite rose have formed in lens shapes, and are described as being lenticular.

DENDRITIC Dendritic aggregates, such as this silver, form in slender, divergent, somewhat plantlike branches.

BLADED These kyanite crystals are elongated and flattened like knife blades. They have a bladed habit.

ACICULAR This mass of slender, radiating mesolite crystals can be described as acicular, meaning needlelike.

BY : JHONNY